INFLUENCE OF SALICYLIC ACID AND STORAGE DURATION ON STORABILITY OF PERSIMMON FRUIT

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ABSTRACT

To assess the response of persimmon fruits to the dipping application of salicylic acid and storage duration on storability, an experiment was evaluated at the Post Harvest Laboratory, Department of Horticulture, The University of Agriculture, Peshawar during the year 2021. The experiment was laid out in Completely Randomized Design with two factors factorial arrangement and repeated three times. Persimmon fruits were dipped in salicylic acid at the concentration of 0, 2, 4 and 6 mML^{-1} for ten minutes. After air drying the fruits were stored at ambient condition (18-24^{o}C and 50-70% RH) and their quality parameters were studied at ten days of interval for one month. The fruits that were treated with 6 mML^{-1} of salicylic acid showed maximum fruit firmness (2.29 $kgcm^{-2}$) and titrable acidity (0.27%) and the minimum juice contents (25.55%) and total soluble solids contents (19.24 ^{o}Brix). The untreated fruits showed highest percent disease incidence (19.17%), percent weight loss (17.28%), juice contents (35.68%) and total soluble solids (20.97 ^{o}Brix) with lowest fruit firmness (1.47 $kgcm^{-2}$) and titrable acidity (0.23%). Storage duration significantly influenced all the quality parameters of persimmon fruits. The fruits stored for 30 days of storage duration showed highest disease incidence (25.00%), weight loss (21.44%), juice contents (33.15%) and TSS (21.19^{o}Brix) with the lowest fruit firmness (0.83 $kgcm^{-2}$) and titrable acidity (0.24%). The freshly harvested fruits showed highest fruit firmness (3.28 $kgcm^{-2}$) and titrable acidity (0.28%) with the lowest disease incidence (0.00%), weight loss (0.00%), juice contents (25.49%) and TSS (18.82 ^{o}Brix). The interaction of salicylic acid and storage duration significantly influenced only percent disease incidence and percent weight loss, while non-significantly affected the fruit firmness, juice contents, TSS and titrable acidity. It was concluded from the results that salicylic acid effectively maintained the quality attributes of persimmon fruits through sustaining the fruit firmness, juice contents, TSS, and titrable acidity. However, the treatment of 4 mML^{-1} of salicylic acid was the most efficient as it minimized the percent disease incidence and percent weight loss of persimmon fruit as well as maintained other quality attributes. It was recommended from the experiment that persimmon fruits could be treated with 4 mML^{-1} of

salicylic acid after harvest to maintain the quality attributes for 30 days storage at ambient condition (18-24ºC and 50-70% RH) at Peshawar.

Keywords: Persimmon, salicylic acid, storage, disease, weight loss, firmness.

INTRODUCTION

Persimmon (*Diospyros kaki* L.) is a deciduous fruit tree, belongs to the Ebenaceae family (Khan *et al.,* 2020). It is native to China but its growth and commercial production is also started in many countries where there are warm summers and winter offer adequate chilling temperature to overcome its dormancy requirements. Persimmon is considered as a national fruit of Japan (Shahzad *et al.,* 2020). It has a delicious flavor and may be eaten fresh, dried or can be caned. It is a good source of dietary fiber (24%), carotenoids, vitamins A (55%) and vitamin C (21%) that minimizes the chances of heart diseases and protects against various diseases. It also improves eye vision, skin, teeth and gums. As a supplier of vitamin B_6, it helps in metabolism of proteins and as potassium source it regulates the blood pressure (Mehmood *et al.,* 2018). Persimmon is one of the important fruit grown in Pakistan. The total area under the cultivation during 2011-12 was 2.94 thousand hectares with the production of 21.828 thousand tons (Anonymous, 2011-12). China, Japan and South Korea are the major growers of persimmon and constitute about 92% of total world production (Nissen *et al.*, 2008). The world total production is about 3.6 million tons, while China is the main producing country and ranked first in the world, with total production of 2.5 million tons on an estimated area of 762.5 thousands hectares (FAOSTAT, 2010). The storage life of persimmon is very limited due to its perishable nature. Several post-harvest losses have been reported during its handling and storage. Due to transpiration, excessive weight loss has also been reported which negatively influenced the quality of fruit through deformation. During storage, respiration showed a typical climacteric pattern that cause to decrease the fruit firmness and lose their marketable value after 40-60 days. Other quality parameters such as titrable acidity, total sugar and vitamin C were also affected during storage (Ayub *et al.,* 2021). In the post-harvest handlings of persimmon fruit, the major problems are severe softening and disease occurrence. Delay in softening and control of diseases can extend and enhance the post-harvest shelf life of persimmon (Mehmood *et al.,* 2021). Nowadays, the management of post-harvest diseases by using chemical fungicides is prohibited due to its injurious effects on human's health and also on environment. That's why there is a great need to develop safe and effective disease management strategies (Amin *et al.,* 2022). Hence, the control of post-harvest diseases by applying natural compounds that encouraged resistant to such diseases is a safe and attractive strategy and "Salicylic acid" is one of the eminent and efficient natural inducer (Ayuba et al., 2020). Salicylic acid (SA) is a natural and safe phenolic compound, which is highly potent in control of post-harvest losses of horticultural crops. Pre harvest application of SA induces the defense resistance systems, which is effective for controlling the post-harvest decay on a commercial scale. Besides its pre harvest importance, it also leads to useful, safe and promising effects when it is applied as a post-harvest treatment (Asghari and Aghdam, 2010). Salicylic acid (SA) is a beneficial plant growth regulator. Endogenously, the accumulation of SA induces "systematic acquired resistance" (SAR) mechanism, which is one of the classical and typical form of induced resistance (Rehman et al., 2022). Molecules of SA is also involved in some signal transduction systems, which causes the bio-synthesis of defense compounds like, poly-phenols and alkaloids pathogenesis related (PR) proteins (Yao and Tian, 2005). Exogenously, SA generates many types of physiological and metabolic activities of plants. It could decrease the ethylene production and action, initiate disease resistance, decrease the rate of respiration, induction of crop tolerance to chilling injuries, reduces the rate of ripening and senescence, maintaining crop firmness and prevention of cell wall degrading enzymes (Asghari and Aghdam, 2010). As an anti-fungal, the applied salicylic acid moves inside the plant systemically and affect the defense genes which induce resistance against different kinds of pathogens (Oostendorp *et al.,* 2001. Keeping in view the importance of salicylic acid (SA) in postharvest study of fruits, the present experiment was designed with the objectives to study the influence of salicylic acid and storage duration on storability of persimmon fruit.

MATERIALS AND METHODS

The experiment "Influence of salicylic acid and storage duration on storability of persimmon fruit (*Diospyros kaki* L.)" was conducted at Postharvest Laboratory, Department of Horticulture, The University of Agriculture, Peshawar during the year 2021. The experiment was laid out in Completely Randomized Design (CRD) with two factors factorial arrangements, repeated three times. The two factors were; Salicylic acid (0, 2, 4 and 6 mML^{-1}) and Storage duration (Freshly harvested, 10, 20 and 30 days).

Fruit samples: Persimmon fruits were harvested at physiological mature and orange red color stage from an orchard of New Developmental Farm, Department of Horticulture, Malakandhair. Then harvested fruits were instantly transported to Postharvest Laboratory, Department of Horticulture, The University of Agriculture, Peshawar. The fruits of uniform size and maturity having no wounds were sorted for experiment. Each treatment contained 10 fruits so the total numbers of fruits were 480. These fruits were divided into four groups (120 fruits in each group) and each group was treated by dipping in the solution of 0 (as control), 2, 4 and 6 mML^{-1} of salicylic acid (SA) for 10 minutes at $25^{o}C$. Treated fruits were then air dried for about 30 minutes and then stored at the room temperature, which was about $18\text{-}24^{o}C$ and 50-70 % RH for 1 month. For analyzing various qualitative attributes for assessment of fruit quality, observations were recorded on 1st day of storage and then subsequently after 10 days of interval till the end of experiment (up to 30 days of storage).

Disease Incidence (%)*:* Disease incidence was recorded at each storage interval by means of visual observation of disease symptoms in each replication of each treatment. It was presented as percentage of fruits showing the disease symptoms after the storage at respective storage period and was calculated by using the following formula.

$$\% \text{ Disease incidence} = \frac{\text{Number of fruits infected}}{\text{Total number of fruits}} \times 100$$

Percent weight loss (%)*:* All the persimmon fruits in each treatment were weighed before and after storage to calculate the weight loss (%) during storage. It was determined with the help of electronic balance in grams. Weight loss was expressed as a percent of its original weight and was determined by using the following formula.

% Weight loss =

$$\frac{\text{Fruit wt. before storage - Fruit wt. after storage}}{\text{weight of fruits before storage}} x100$$

Fruit firmness (kg cm^{-2}): Fruit firmness was determined by using Penetrometer (Wagner Fruit Firmness Tester model FT- 327) equipped with 8 mm tip which is suitable for soft fruits (Tareen *et al.*, 2011).

Total soluble solids (°Brix): Total soluble solids of all the treatments of each replication were determined with the help of Refractometer (Kernco, Insruments Co. Texas). Placed couple of drops from extracted juice (homogenized) of each sample onto the clean and dry prism of Refractometer. Pointing the prism in the direction of good light (not directly at the sun), focus the eyepiece and took the reading. Then cleaned and dried thoroughly the prism with a damp tissue after use.

Titrable acidity (%): Percent acidity was determined by neutralization reaction (AOAC, 1990). The results were expressed as gram of malic acid per 100 gram fresh weight.

Statistical procedure: The data obtained was analyzed by using a statistical package Statistix 8.1 was used with least significant difference (LSD) at 5% probability level. MS. Excel 2010 was used for making figures (Jan *et al.*, 2009).

RESULTS AND DISCUSSIONS

Disease incidence (%): The statistical analysis showed that various concentrations of salicylic acid, storage durations and their interaction significantly influenced the percent disease incidence of persimmon fruits. The mean data given in Table 1 and Fig. 1 revealed that the highest disease incidence (19.17%) was observed in the control fruit which was statistically different from the rest of treatments, followed by disease incidence (15.00 and 12.50%) in fruits supplied with 6 and 2 mML^{-1} of salicylic acid. While the fruits treated with 4 mML^{-1} of salicylic acid showed the lowest disease incidence (8.33%) of persimmon fruit. Different storage durations also showed a significant difference in the disease incidence of persimmon fruits. The highest disease incidence (25.00%) was observed in the fruits stored for 30 days, followed by the disease incidence (19.17 and 10.83%) in the persimmon fruits stored for 20 and 10 days respectively. Similarly, interaction of salicylic acid and storage durations also significantly affected the percent disease incidence of persimmon fruits. The highest disease incidence (30.00%) was observed in control fruits stored for 30 days of storage duration as well as also in the fruits treated with 6 mML^{-1} of salicylic acid. While the lowest disease incidence (3.33%) was observed in the persimmon fruits treated with 4 mML^{-1} of salicylic acid. The fruits not stored showed no disease incidence in persimmon fruits.

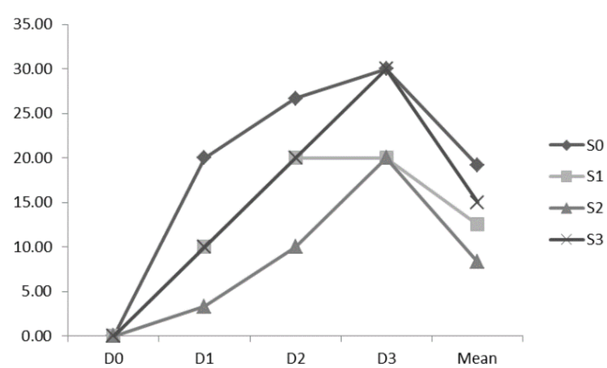

Fig.1: Influence of salicylic acid and storage duration on percent disease incidence of persimmon fruit

The proteomics analysis verified that salicylic acid up regulated 18 types of proteins when applied to fruits. Some of these might act as antioxidants enzymes which are responsible for disease resistance by protecting the cells against oxidative damage. While, some other proteins were pathogenic related proteins associated with systemic acquired resistant (Chan *et al.,* 2007). Salicylic acid can also enhanced five heat shock proteins which operated a primary defense mechanism against pathogens during oxidative stresses by preventing damage to cellular membrane (Chan *et al.,* 2008). Khademi *et al.* (2012) observed that with increase in storage duration the persimmon fruits become soft and susceptible to pathogens attacks, which causes various diseases. They further investigated that salicylic acid was very effective and safe to enhance the post-harvest life of persimmon fruit in comparison with untreated fruits. Zhang *et al.* (2003) also stated that high levels of salicylic acid in kiwi fruits slow down the climacteric rise in ethylene production by suppressing the ACC (1-aminocyclopropane-1-carboxylate) synthase and oxidase activities. The same conclusions regarding control of post-harvest disease occurrence due to application of salicylic acid during storability were obtained by Shafiee *et al.* (2010) on strawberries, Mandal *et al.* (2009) on tomatoes, Zhang *et al.* (2008) on peaches, El-Ghaouth *et al.* (2000) on citrus and apple fruits.

Weight loss (%): The statistical analysis of data showed that various levels of salicylic acid, storage durations and their interaction significantly influenced the percent weight loss of persimmon fruits. The findings in Table 1 and Fig. 2 showed that the highest percent weight loss (17.28%) was recorded in the untreated fruits, followed by the weight loss (15.22 and 12.27%) of fruits treated with 6 and 2 mML^{-1} of salicylic acid respectively. The lowest percent weight loss (10.15%) was observed in the fruits treated with 4 mML^{-1} of salicylic acid. The weight loss of fruits consistently increased with increase in storage duration as expected, and the maximum weight loss (21.44%) occurred in the fruits stored for 30 days of storage duration, followed by the weight loss (18.71 and 14.75%) in fruits stored for 20 and 10 days respectively. While the control treatment showed the lowest weight loss (0.00%). The interactive effect of salicylic acid and storage duration showed a significant influence on the percent weight loss of persimmon fruits. The maximum percent weight loss (27.26%) was recorded in the control fruits stored for 30 days of storage duration, while the minimum weight loss (10.78%) was noted in the fruits treated with 4 mML^{-1} of salicylic acid at 10 days of storage duration. Weight loss in stored fruits is due to respiration, transpiration and metabolic activities. As an electron donor salicylic acid produced free radicals which avert regular respiration (Wolucka *et al.*, 2005) and closes the stomata to reduce the respiration rate (Zheng and Zhang, 2004). Salicylic acid declined the hydrolytic cell wall enzymes activity to suppress the rate of transpiration (Llic *et al.*, 2001). It was also associated with decrease in metabolic activities of fruits which reduced weight loss, water contents and rate of carbohydrates depletion which concurrently postponed the senescence process and thus restrained the weight loss of fruit (Wills *et al.,* 1998). The results coincides with the conclusions of Lolaei *et al.* (2012) who found that minimum weight loss occurred by dipping of strawberry fruits in salicylic acid compared with untreated and highest level of SA. Other scientists found the similar effect of salicylic acid regarding on weight loss; Khademi *et al.* (2012) on persimmon fruits, Abbasi *et al.* (2010) on peach fruits cv. Delicia. Tareen *et al.* (2012) studied that weight loss increased expectedly with increase in storage period.

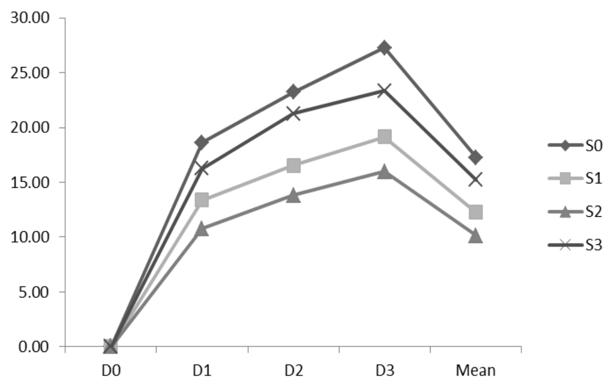

Fig. 2: Influence of salicylic acid and storage duration on percent weight loss of persimmon fruit

Fruit firmness (kg cm^{-2}): The analysis of data revealed that the salicylic acid and storage duration significantly influenced the firmness of persimmon fruit while their interaction was non-significant. The mean data given in Table 1 clearly indicated that the highest fruit firmness (2.29 kg cm^{-2}) was observed in the persimmon fruits treated with 6 mML^{-1} of salicylic acid, which was statistically at par with other treatments followed by fruit firmness (2.13 and 2.08 kg cm^{-2}) of fruits treated with 4 and 2 mML^{-1} of salicylic acid. While the lowest fruit firmness (1.47 kg cm^{-2}) was observed in untreated persimmon fruits. Similarly, storage duration also showed significant differences and the highest fruit firmness (3.28 kg cm^{-2}) was achieved in freshly harvested persimmon fruits, which gradually decreased to fruit firmness (0.83 kg cm^{-2}) after 30 days of storage duration. Fruit firmness is one of the main attribute to examine the ripening process (Tareen *et al.*, 2012). Zhang *et al.* (2003); Wang *et al.* (2006) reported that during ripening of fruits, the rapid softening took place due to rapid decrease in endogenous salicylic acid of fruit but this offensive softening was delayed by post-harvest treatment of exogenous salicylic acid. According to Shafie *et al.* (2010); Ranjbaran *et al.* (2011), salicylic acid influenced the fruit firmness positively. It reduced the internal ethylene production of climacteric fruits that caused a severe softening and senescence by accelerating the rate of respiration (Wills *et al.*, 1998). Besides, it also inhibited the enzyme degradation that causes cell wall and cell membrane collapsing (Asghari and Aghdam,2010).The results are also in resemblance with Khademi and Ershadi (2013) who observed that during storage the application of salicylic acid significantly maintained the fruit firmness. Razavi *et al.* (2014) reported the similar result that salicylic acid effectively retained the fruit firmness of peach fruit. The post-harvest treatment of salicylic acid in sustaining fruit firmness had also been reported by Srivastava and Dwivedi (2000) on banana and Kazemi *et* al. (2011) on kiwi fruit.

Table 1: The influence of salicylic acid and storage duration on disease incidence (%), weight loss (%) and fruit firmness (kg cm^{-2}) of persimmon fruit

Salicylic acid (mML^{-1})	Disease incidence (%)	Weight loss (%)	Fruit firmness (kg cm^{-2})
0 (Control)	19.17 a	17.28 a	1.47 b
2	12.50 c	12.27 c	2.08 a
4	8.33 d	10.15 d	2.13 a
6	15.00 b	15.22 b	2.29 a
LSD α 0.05	1.20	1.32	0.23
Storage duration (Days)			
0 (Freshly harvested)	0.00 d	0.00 d	3.28 a
10	10.83 c	14.75 c	2.24 b
20	19.17 b	18.71 b	1.63 c
30	25.00 a	21.44 a	0.83 d
LSD α 0.05	1.20	1.32	0.23
Interaction (SA x SD)	2.40 (Fig. 1)	2.65 (Fig. 2)	NS

Mean followed by similar letter(s) in column do not differ significantly
NS = Non-Significant.
SA x SD = Interaction between salicylic acid and storage duration

Juice contents (%): The analysis of variance showed that salicylic acid and storage duration significantly impacted on juice content of persimmon fruit, while their interaction was found non-significant. The Table 2 showed that the highest juice contents (35.68%) was recorded in untreated fruits, which significantly varies from juice content (28.76 and 27.28%) of the fruits treated with 2 and 4 mML^{-1} of salicylic acid respectively. While the lowest juice contents (25.55%) was noted in the fruits treated with 6 mML^{-1} of salicylic acid. Similarly, by comparing the storage durations, there was a significance difference among the storage intervals. The highest juice contents (33.15%) was observed in the fruits stored for 30 days of storage duration which was statistically in contrast with rest of storage durations, followed by juice contents (30.52 and 28.11%) of fruits stored for 20 and 10 days respectively. While the lowest juice contents (25.49 %) were noted in freshly harvested fruits of persimmon. Persimmons are very susceptible to unwanted exposures like ethylene and low temperature etc (Salvador *et al.*, 2004). Nanako *et al*. (2001); Wills *et al.* 1998) observed that during storability, increase in rate of ethylene production and respiration leads to ripening and senescence of fruits. The softening of persimmon was controlled by the internal ethylene production. Salicylic acid was associated with decrease in metabolic activities of fruits which progressively delayed the ripening, that leaded to decrease in juice content of fruits. During fruits storage, the ripening and senescence processes of fruits were associated with several qualitative changes like firmness, increase in sugar and decrease in total acidity, color and aroma development and in some fruits like persimmons it enhanced the juice concentration (Wills *et al.,* 1998). The results are in similarity with the findings of Moreno *et al.* (2008) who observed that with respect to the increased in sugar contents, treatment of salicylic acid could increase the juice concentration in peach fruit.

Total soluble solids (°Brix): Analysis of variance showed that salicylic acid and storage duration significantly impacted the total soluble solids of persimmon fruit while their interaction was found non-significant. The mean data of Table 2 revealed that the highest soluble solids contents (20.97 °Brix) was observed in the untreated fruits which was statistically dissimilar from rest of treatments, followed by TSS contents (19.99 and 19.53 °Brix) of persimmon fruits treated with 2 and 4 mML^{-1} of salicylic acid respectively. As pertaining to the storage durations, the fruits have highest level of TSS contents (21.19 °Brix) after 30 days of storage duration, which was statistically in contrast with TSS contents (20.22 and 19.50 °Brix) of fruits after 20 and 10 days of storage duration respectively. While the lowest TSS contents (18.82 °Brix) were observed in freshly harvested persimmon fruits. A total soluble sugar of fruits was the main qualitative attribute which was correlated with other quality attributes like texture and composition (Weibel *et al.*, 2004; Peck *et al.*, 2006). It was considered as a vital aspect for fruit quality and contained about 75% sugar (Shah *et al.,* 2002). During fruit ripening the increase in sugar level was triggered by the action of an enzyme called sucrose phosphate synthase (SPS). This enzyme was responsible for biosynthesis of sucrose that caused an increase in TSS of fruits (Hubbard *et al.,* 1991). The combination of ripening process and ethylene resulted in the activation of SPS enzymes in cold storage (Langenkamper *et al.*, 1998). Asghari and Aghdam (2010) stated that polysaccharides contents (pectin and cellulose) of cell wall were digested by the action of cell wall degrading enzymes and salicylic acid could successfully protected the cell wall by declining the degrading enzymes, which also prevented a vivid increase in TSS of fruit cells. The results correspond with the findings of Aghdam *et al.* (2011) on kiwi fruit, who stated that the high dose of methyl salicylate have lowest TSS in relation to control. Sayyari *et al.* (2009) and Ding *et al.* (2007) found a non-significant change in soluble solids for any treatments during storability of pomegranates. Razavi *et al.* (2014) observed the lowest TSS in peach fruits treated with salicylic acid. Moreno *et al.* (2008) found that with the passage of storage period, TSS of grapes increased due to weight loss. The balance between sugar and acid was one of the important characteristic in sense of fruit quality and taste (Tareen *et al.*, 2012). During storability there was decline in total acidity and increase in total soluble sugars, which revealed the ripening stage of fruit and also their balance results in remarkable fruit taste (Razavi *et al.,* 2014).The treatment of salicylic acid improved and enhanced the quality and chemical attributes of fruits (Asghari and Aghdam, 2010).

Titrable acidity (%): The analysis of variance showed that salicylic acid and storage duration significantly affected the percent titrable acidity of persimmon fruit, whereas the interaction of both factors was found to be non-significant. The mean data in Table 2 confirmed that the highest percent titrable acidity (0.27%) was observed in the fruits treated with 6 mML^{-1} of salicylic acid, which was statistically at par with titrable acidity (26 and 25%) of persimmon fruits treated with 4 and 2 $mML^{-1}$of salicylic acid respectively. While the lowest percent titrable acidity (0.23%) was observed in the untreated fruits. As referred to the various storage durations, there was significant variation among the means. The highest titrable acidity (0.28%) was noted in freshly harvested fruits, which was statistically different from the rest of storage intervals, followed by titrable acidity (0.26 and 0.25%) of persimmon fruits for 10 and 20 days of storage duration respectively. While the lowest titrable acidity (0.24%) was observed in the fruits stored for 30 days of storage duration. The decline in titrable acidity is extensively influenced due to rate of metabolism specially respiration, which consumed organic acid of fruit (Clarke *et al.*, 2001; Rivera, 2005; Ghafir *et al.*, 2009). Abbasi *et al.* (2013) suggested that during storability of fruits the respiration leaded to disintegration of acids into sugars due to fermentation and breakup of sugars, which resulted in decrease of total acidity in fruits. Sun *et al.* (2013) determined that high level of titrable acidity also delayed the senescence process and enhanced the disease resistance against certain pathogens. Ali *et al.*, (2013) found that with application of salicylic acid declining pattern in fruit acidity become much slower which indicates the shelf life stability. The ripening of fruit delayed with increase in salicylic acid concentration. The results are related with the findings of Tareen *et al.* (2012), who noticed a steady decrease in titrable acidity of peach fruit with the passage of storage duration, but they also noticed that the fruits treated with salicylic acid showed an increase in titrable acidity while there was decrease in titrable acidity of untreated fruits. Similar results regarding salicylic acid were also observed by Sayyari *et al.*, (2009) in pomegranates and Echverria and Valich (1989) in apricots. Similar results were also observed by Razavi *et al.* (2014), who examined an increased in fruit sugars and decline in total acidity during peach storability, but the changes were significantly low in the fruits treated with salicylic acid as compared with control. They also found a non-significant difference among the fruits treated with salicylic acid. Similarly non-significant changes among the TSS and TA by the treatment of salicylic acid were observed in pomegranates (Sayyari *et al.*, 2009), cherries (Chan *et al.*, 2008).

Conclusions and Recommendations: It was concluded from the experimental results that salicylic acid could effectively maintain all the quality attributes but the concentration of 4 mML^{-1} of SA is much better as it minimizes the percent disease incidence and weight loss of persimmon fruit.

Table 2: The influence of salicylic acid and storage duration on juice contents (%), T.S.S (ºBrix) and titrable acidity (%) of persimmon fruit

Salicylic acid (mML^{-1})	Juice contents (%)	Total soluble solids (ºBrix)	Titrable acidity (%)
0 (Control)	35.68 a	20.97 a	0.23 c
2	28.76 b	19.99 b	0.25 b
4	27.28 bc	19.53 bc	0.26 ab
6	25.55 c	19.24 c	0.27 a
LSD α 0.05	1.88	0.57	0.008
Storage duration (Days)			
0 (Freshly harvested)	25.49 a	18.82 d	0.28 a
10	28.11 b	19.50 c	0.26 b
20	30.52 c	20.22 b	0.25 c
30	33.15 d	21.19 a	0.24 d
LSD α 0.05	1.88	0.57	0.008
Interaction (SA x SD)	NS	NS	NS

Mean followed by similar letter(s) in column do not differ significantly
NS = Non-Significant.
SA x SD = Interaction between salicylic acid and storage duration

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